

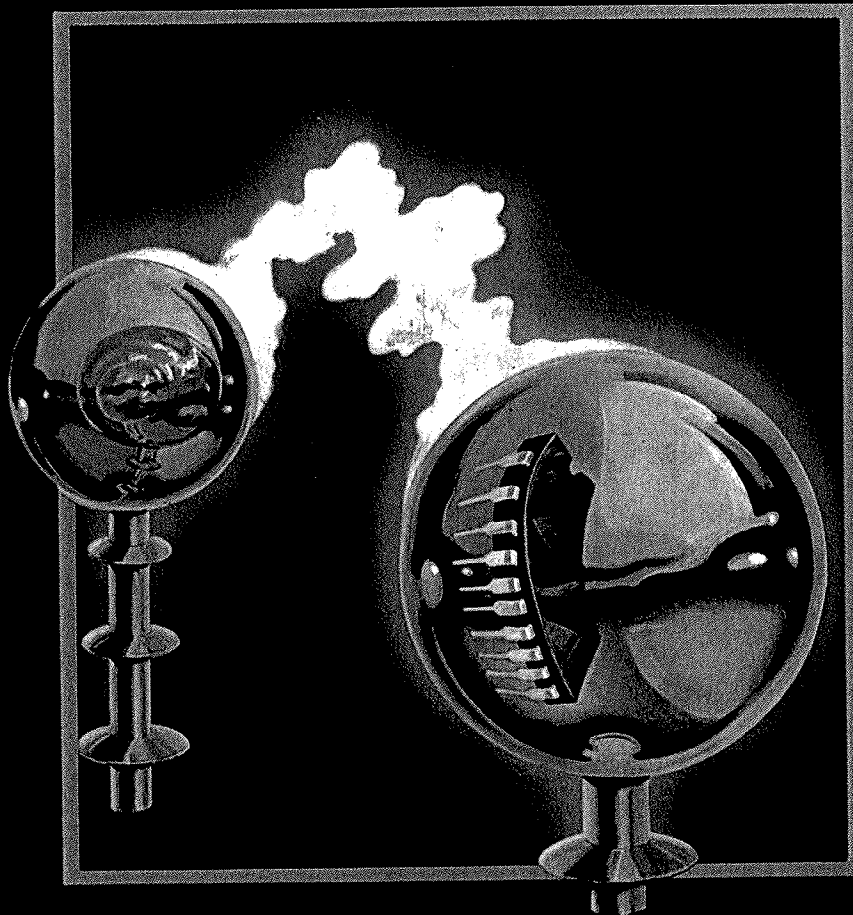
EXHIBIT F

SAMS

Rudolf F. Graf

Modern Dictionary of Electronics

Sixth Edition



REF

MODERN
DICTIONARY
of
ELECTRONICS

Rudolf F. Graf

SIXTH EDITION

SAMS

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by Rudolf F. Graf

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620

extremely short electron-
duration of about 1×10^{-12} in photographing
experiments.

A lamp that emits ra-
diation a duration of
microsecond.

The use of microfilm
in basic documents
and made available
to Special computer
to maintain an index
and to aid in their

disc recording, the
fast long-play and 45-
rpm it is 0.001 inch
wide as wide as the
record.

See Long-Play

millionth of a henry.
millionth of an ohm.

1. A very simple
a register-to-register
elementary operation,
A bit pattern that is
program memory word
variation of the individ-
elements and related
in memory and input

sequence—The series
that the micropro-
cessor (CPU) selects from the
to execute a single macro-
command. Micro-
commands can be shared by
various systems.

lock-loop system for
receiving information.
reduces bandwidth
as a radar beacon for
to provide telemetering

1. A group of high-
level integrated logic
primarily intended to be
a logic section of a dig-
ital computer.

1. Semiconductor
computer and other crit-
ical components.

—Devices that pro-
cess data by moving minis-
tructures onto the surface of a
chip.

See Interconnect

millionth of a meter.
millionth of a mho or of
ohm by microsiemens.

Obsolete prefix mean-
ing millionth, or 10^{-12} .

Obsolete term for
picoampere.

621

micromicrowatt — Obsolete term for
 10^{-12} watt. Now called picowatt.

microminiature lamp — Any incandes-
cent lamp, usually rated in the milliwatt
range, that operates on 3 volts or less.
Diameters range from 0.01 to 0.06 inch,
or 0.25 to 1.5 mm.

microminiaturization — 1. The produc-
ing of microminiature electronic circuits
from individual miniature solid-state and
other nonthermionic components. 2. A
relative degree of miniaturization result-
ing in an equipment or assembly volume
an order of magnitude smaller than that
existing in subminiature equipment. 3.
The technique of packaging a micromini-
ature part of an assembly composed of
elements radically different in shape and
form. Electronic parts are replaced by
active and passive elements, through use
of fabrication processes such as screening,
vapor-deposition diffusion, and photo-
etching. 4. The process of packaging an
assembly of microminiature active and
passive electronic elements, replacing an
assembly of much and different parts.

micromodule — 1. A tiny ceramic wafer
made from semiconductive and insulative
materials. It is capable of functioning as
either a transistor, resistor, capacitor, or
other basic component. 2. A microcircuit
constructed of a number of components
(e.g., microwafers) and encapsulated to
form a block that is still only a fraction of
an inch in any dimension.

micron — 1. An absolute unit of length
equal to 10^{-6} meter. The term micrometer
is now preferred. 2. A unit used in the
measurement of very low pressures. It is
equivalent to 0.001 mm (10^{-6} meter) of
mercury at 32°F or 0°C.

microphone — 1. An electroacoustic trans-
ducer which responds to sound waves and
delivers essentially equivalent electric
waves. A device for converting sound
waves or sound-producing vibrations (as
from the strings of a guitar) into corres-
ponding electrical impulses. Microphones
may use as transducing elements crystal
or ceramic chips, ribbons, moving coils,
or capacitors, and different recording
applications may call for different trans-
ducers as well as for different directional
patterns and impedances.

microphone amplifier — Also called a mi-
crophone preamplifier. An audio-frequen-
cy amplifier that boosts the output of a
microphone before the signal reaches the
main audio-frequency amplifier.

microphone boom — A movable crane
from which a microphone is suspended.

microphone button — The resistance
element of a carbon microphone. It is
button-shaped and filled with carbon
particles.

microphone cable — A shielded cable for
connecting a microphone to an amplifier.

micromicrowatt—microprocessor

microphone mixer — An audio mixer
that feeds the output from two or more
microphones into a single input to an
audio amplifier. The output from each mi-
crophone is adjustable by individual con-
trols on the mixer.

microphone preamplifier — See Micro-
phone Amplifier.

microphone sensitivity — The voltage
that is produced by a microphone that is
exposed to a specified sound pressure
level. Usually specified in dBV in a 94 dB
spl or 74 dB spl sound field, measured
with no load on the microphone.

microphone stand — A stand that holds a
microphone the desired distance above
the floor or a table.

microphone transformer — An iron-
core transformer used for coupling cer-
tain microphones to an amplifier or trans-
mission line.

microphonics — 1. The generation of an
electrical noise signal by mechanical
motion of internal parts within a device.
2. Electrical disturbance (noise) due to
mechanical disturbances of circuit ele-
ments. 3. A form of noise interference
arising from the tendency for vibrations
of certain objects to be converted into
corresponding electrical signals. A micro-
phonic device will cause a "bong" or
"bing" in the signal when subjected to
jarring. 4. Audio-frequency noise caused
by the mechanical vibration of elements
within a system or component. 5. Micro-
phone noise that occurs in lasers when
vibrations are transferred to the resonator
structure.

microphonism — 1. The production of
noise as a result of mechanical shock or
vibration. 2. The quasiperiodic voltage
output of a tube produced by mechanical
resonance of its elements as a result of
mechanical impulse excitation. 3. The
periodic voltage output of a tube pro-
duced by mechanical resonances of its
elements as a result of sustained mechan-
ical excitation. 4. The output voltage of a
tube acting as an electrical transducer of
mechanical energy.

microphonograph — A device which
amplifies and records weak sounds; used
in training the deaf to speak.

microphonoscope — A binaural stetho-
scope using a membrane in the chest
piece to accentuate the sound.

microphotograph — A small picture of a
large subject. The microfilming of a check
or other document produces a micro-
photograph.

microprobe — An extremely sharp and
small exploring tool head attached to a
positioning handle. Used for testing
microelectronic circuits by establishing
ohmic contact.

microprocessor — 1. The control and
processing portion of a small computer or

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microcomputer, that can be built with LSI MOS circuitry usually on one chip. Like all computer processors, microprocessors can handle both arithmetic and logic data in a bit-parallel fashion under control of a program. But they are distinguished both from a minicomputer processor by their use of LSI with its lower power and costs and from other LSI devices (except calculator chips) by their programmable behavior. 2. A computer contained on as few as three chips, which functions as central processor for executing instructions, a volatile memory for storing data, and interface unit through which data and instructions are transmitted. 3. An IC package incorporating logic, memory, control, computer, and/or interface circuits, the whole of which is designed to handle certain functions. 4. An electronic computer processor section implemented in relatively few IC chips (typically LSI) which contain arithmetic, logic, register, control, and memory functions. 5. A complete processing unit on one large-scale integrated circuit. 6. An LSI device that performs the functions of the central processing unit and the control unit of a computer. It is called a microprocessor because of its extremely small size; typically it is contained on a single integrated circuit chip. Some of the larger microprocessors have the CPU on one chip and the control unit on a second chip. In a few cases, three or four chips may be needed to contain both functions. 7. A small, low-power device that can accept a number of different input signals, remember them, operate on them in various preprogrammed ways, and then use them to provide many different outputs. 8. A single LSI circuit that performs the functions of a CPU. Characteristics of a microprocessor include small size, inclusion of a single integrated circuit or a set of integrated circuits, and low cost. 9. The LSI implementation of a complete processor (alu plus control unit) on a single chip. 10. A semiconductor device that can perform arithmetic, logic, and decision-making operations under the control of a set of instructions stored in a memory device. It can also communicate with a set of peripheral devices via some defined input/output structure. It is a general-purpose digital computer with a stored program, much like a minicomputer. The major significance of a microprocessor is that all of the elements of a minicomputer have been reproduced in a single, large-scale integrated chip of silicon, usually not much larger than the eraser on a pencil. 11. A general purpose processor fabricated on one or more chips. The generally accepted basic elements present are an alu, control logic, the instruction set memory, and the ad-

dress and data registers. The clock generator may or may not be present and the i/o capability is limited. Support chips are required to provide enhanced i/o and memory functions. 12. A semiconductor device that contains one or more registers which hold data in the form of binary words and a set of instructions allow a number of different operations, arithmetic, logical or other kinds, to be performed on the contents of designated registers or memory locations. By building up sequences of instructions, the microprocessor can be programmed to carry out specific tasks. System functions of the most complex nature can be broken down into a sequence of simple operations just as the most complex Boolean expression can be derived from the basic AND, OR, and NOT functions. 13. The central processing unit (CPU) of a computer. It houses the control functions and the arithmetic and logic unit (alu) that perform all the computations and logic decisions. When instruction and data memory are added, along with input and output (i/o) circuitry, the microprocessor becomes a microcomputer. 14. A semiconductor integrated circuit that can perform arithmetic, logic, and decision-making operations as well as communicate with input and output devices controlled by instructions stored in a memory. It contains many or all of the central processing functions and is synonymous with the central processing unit, or CPU. In general-purpose, stored-program digital computers the CPU has control, coding, and decoding functions in carrying out logic, arithmetic, and decision making and may contain some memory. In microprocessors all these functions have been compressed into a single silicon chip that may contain from 5000 to 7000 transistors.

microprocessor development system—

A combination of hardware and software that acts as a tool for micro system design and debugging from concept to final production release. It contains assembler, compiler, and editor programs to assist with the original program writing. It also can simulate the system, both at the concept stage and during the final integration. The larger memory available makes it practical to document programs: add remarks within the program, which will be ignored by the micro, that will indicate to a subsequent user the purposes of specific instructions. These remarks do not, of course, go into the final ROM. The development system is also able to transfer the debugged program that it is already using into PROM or EROM.

microprocessor emulator—A software routine or device that imitates the functions of a specific microprocessor.

microprogram—1. A computer program

written in the most subcommands that computer. Frequent read-only memory. A special-purpose fixed memory, the instruction in a. For example, one program may initiate a sequence of 6 or 7 instructions to execute the single microprogram. 3. In a computer, a conventional program of even smaller instructions. Each further subdivided into microoperations machine cycle. (The program consists of instructions that are ordered. Each instruction of one of the computer machine execute a single microprogram.) Instructions held in the memory perform for each element of main memory directly control function elements. Stored routines that define machines of elemental the processor's special computer program the control unit implements sequential decoding and appropriate signals. Most MPUs are programmed and by the user. Bit-programmable. 6. description of are executed in software seen microprogram computer in which control sequence is generated from the ROM content be changed (the instruction code microprogram of basic suboperations handle, after combines them the computer program. For example, only basic instructions, and a function for dividing microprogram, indicating the control where each microprogram is a small size.